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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SOON-TAE AHN

Appeal 2008-5788
Application 10/521,285
Technology Center 1700

Decided: January 9, 2009

Before CATHERINE Q. TIMM, JEFFREY T. SMITH, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's
decision rejecting claims 1-4. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

STATEMENT OF THE CASE

The invention relates to a quenched and tempered steel wire.

Claims 1 and 3 are illustrative of the subject matter on appeal:

1. A quenched and tempered steel wire with superior cold forging characteristics, comprising 0.1 - 0.5 wt% of C, 1.0 wt% or less of Si, 0.20 - 2.5 wt% of Mn, 0.03 wt% or less of P, and 0.03 wt% or less of S, with the balance being Fe and inevitable impurities, which has tensile strength in a range of 700-1300 Mpa and a structure of a martensite base and carbides precipitated therefrom, with a percent spheroidization of carbides not less than 30%.

3. A quenched and tempered steel wire with superior cold forging characteristics, comprising the steel wire of claim 1 drawn.

The Examiner relies on the following prior art reference to show unpatentability:

Kanisawa

US 6,547,890 B2

Apr. 15, 2003

The Examiner has rejected claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over Kanisawa.

Appellant has argued claims 1 and 2 as one group and separately argued claims 3 and 4 as another group (App. Br. 6-9). Thus, in accordance with 37 C.F.R. § 41.37(c)(1)(vii), we select claim 1 and claim 3 as representative for each of these claim groupings.

ISSUES ON APPEAL

Appellant contends that although Kanisawa describes that a martensite base is present before a spheroidizing annealing step, Kanisawa does not teach that a martensite base is present in the tempered steel with the spheroidized carbides as required in claim 1 (App. Br. 4-7; Reply Br. 2). However, the Examiner contends that Kanisawa renders the claimed product obvious, noting that the claim does not require any minimum amount of remaining martensite base, and that therefore it is Appellant's burden to

prove that the product of Kanisawa's process would not necessarily have the claimed martensite base (Ans. 4-7).

The first issue on appeal arising from these contentions of the Appellant and the Examiner is: has the Examiner established a *prima facie* case of obviousness such that it is reasonable to shift the burden to Appellant to prove that the product produced in Kanisawa does not have the recited martensite base?

We answer this question in the affirmative.

With respect to claims 3 and 4, the Appellant contends that Kanisawa does not teach that the steel wire is drawn as required by claim 3 because Kanisawa describes that "preliminary drawing" is not required (App. Br. 8-9). The Examiner contends that claim 3 is a product-by-process limitation, but nonetheless Kanisawa explicitly describes a "finish drawing" step (Ans. 8).

The second issue on appeal arising from the contentions of the Appellant and the Examiner is: has the Examiner established that claim 3, which "compris[es] the steel wire of claim 1 drawn", is rendered obvious by the product taught in Kanisawa?

We answer this question in the affirmative.

PRINCIPLES OF LAW

Appellant has chosen to describe the invention, in part, in terms of certain physical characteristics of the resulting product produced by the process described in their specification. Merely choosing to describe the invention in terms of variables not present in the prior art does not render the claimed subject matter patentable. *In re Skoner*, 517 F.2d 947, 950 (CCPA 1975).

As stated in *In re Best*, 562 F.2d 1252, 1255-56 (CCPA 1977):

Where, . . . the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. § 102, on 'prima facie obviousness' under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products.

(*Id.*; internal citation omitted)

A prior art reference that discloses a range encompassing a somewhat narrower claimed range, or overlapping a claimed range, is sufficient to establish a prima facie case of obviousness. See, e.g., *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003); *In re Harris*, 409 F.3d 1339 (Fed. Cir. 2005).

The discovery of an optimum value of a variable in a known process or product is usually a matter of obviousness for one of ordinary skill in the art. Cf. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1368 (Fed. Cir. 2007). This is the kind of situation that requires an Appellant to show secondary considerations such as unexpected results or criticality to overcome the prima facie case. See *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980); see also *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

“Where a product-by-process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicants to come forward with evidence establishing an

unobvious difference between the claimed product and the prior art product.” *In re Marosi*, 710 F.2d 799, 803 (Fed. Cir. 1983).

Appellant’s attorney’s arguments do not take the place of evidence in the record. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

FINDINGS OF FACTS

Findings of fact (FF) throughout this decision are supported by a preponderance of the evidence. Additional findings of fact as necessary appear in the Analysis portion of the opinion.

1. We agree with the Examiner’s findings that Kanisawa describes a quenched and tempered steel wire for cold forging that comprises all the components as listed in claim 1 in amounts that are the same or overlap all claimed range amounts except Kanisawa does not specifically teach a “martensite base” along with the spheroidized carbides (see e.g., Ans. 5-6; Kanisawa col. 2, ll. 20-55, Table 3).

2. The Examiner also found, and Appellant does not dispute, that the tensile strength of Kanisawa’s steel wire is described as 793-2206 MPa which substantially overlaps the claimed range of 700-1300 MPa (Ans. 4; Kanisawa, e.g., col. 2, ll. 20-30).

3. Kanisawa describes that a martensite structure is formed prior to the “spheroidizing annealing” step (col. 4, ll. 23-27). Kanisawa describes that a martensite structure is “most suitable” to homogenously distribute carbon in the steel (col. 2, ll. 1-16; Ans. 8).

4. Kanisawa does not explicitly describe that a martensite base remains after the spheroidizing annealing step. However, Kanisawa discloses that the spheroidized annealing wire has a “spheroidizing ratio”

that ranges up to 95% (Table 3). This is not 100% spheroidization thus it reasonably appears that at least some amount of martensite remains after the spheroidizing annealing of the wire.

5. Kanisawa describes that its steel wire may be drawn after the spheroidizing annealing (see, e.g., Fig. 1b).

ANALYSIS

The Examiner found that Kanisawa describes a product substantially as claimed (see, e.g., Ans. 4-5; FF 1-5 above). Appellant contends that Kanisawa does not teach the product as recited in claim 1 because Kanisawa does not teach “overlapping” ranges and further does not explicitly teach that a “martensite base” is present (App. Br. 6-7; Reply Br. 2). These arguments are not persuasive since (a) Kanisawa does indeed describe overlapping ranges for each claimed component (FF 1-2); and (b) Kanisawa teaches that the steel wire may have a martensite base prior to spheroidizing annealing and it would have been a reasonable expectation that some martensite base remains with the spheroidized carbides (FF 4).

Appellant contends that the present invention provides, “with no conventional spheroidizing annealing”, a tempered steel product with “superior cold forging characteristics” (App. Br. 6; *see also* Reply Br. 2). This argument is not well taken since a **product** claim does not preclude “conventional spheroidizing annealing”. Further, the only objective criteria in claim 1 to define “superior cold forging characteristics” is tensile strength. The tensile strength of the steel wire of Kanisawa substantially overlaps the claimed range (FF 2).

Thus, we are in complete agreement with the Examiner that Kanisawa renders the claimed product obvious under 35 U.S.C. § 103. The product of

Kanisawa, when the starting material is a martensite base with components used in the amounts that are the same or overlapping as the claimed amounts, appears to be substantially identical to, and not patentably distinct from, the claimed product.

Furthermore, the claim is open to as little as a trace amount of martensite base being present. One of ordinary skill in the art would have appreciated that it would have been reasonable to expect some remaining “martensite base” as claimed along with the spheroidized carbide particles of Kanisawa.

Thus, the burden was properly shifted to Appellant to prove that the product as claimed is patentably different than the prior art product. The PTO has no reasonable ability to manufacture and determine whether there is, in fact, a patentable difference between the prior art product and the claimed product. Under the circumstances, it is reasonable to shift the burden to Appellant to show that the claimed product created by Kanisawa’s process is, in fact, patentably different from the prior art product. *In re Best*, 562 F.2d at 1255-56.

Appellant’s Specification discloses that the percent spheroidization of carbides is determined from a quenched and tempered steel wire that is subjected to mechanical cutting, chemical polishing and electrolytic polishing at a cross section thereof, to prepare a thin film having a thickness of 0.1 mm or less (Spec. 7, ll. 6-9). Thereafter, a 1/4 point of a circular diameter of the thin film is photographed 50,000-100,000 magnifications by means of a transmission electron microscope (Spec. 7, ll. 9-11). Subsequently, on a photograph, a circle having 50-70 mm across is marked, in which respective carbides are measured for long directional length (L) and

short directional length (S). The short length is divided by the long length to provide the percent of spheroidization (Spec. 7, ll. 12-16). Appellant has not directed us to evidence that an equivalent test has been performed on the product of Kanisawa.

Appellant has not directed us to evidence sufficient to refute the Examiner's finding the process of Kanisawa would have created the claimed product within the overlapping ranges taught by Kanisawa. Instead, Appellant provides unsupported attorney argument as to a skilled artisan's conclusions regarding the teachings of Kanisawa (App. Br. 6-7; Reply Br. 2). An attorney's argument is no substitute for objective evidence against the Examiner's finding. *Pearson*, 494 F.2d at 1405.

Thus, we agree with the Examiner's determination that Kanisawa is evidence of a prima facie case of obviousness for claims 1 and 2.

Claims 3 and 4

We fully agree with the Examiner's factual findings and conclusion of obviousness based on Kanisawa regarding claim 3 (see, e.g., Ans. 8). Appellant's contention that the steel wire of Kanisawa is not "drawn" is not on point, since Appellant does not indicate that there is any distinction in the product claimed. In any event, Kanisawa teaches the steel wire could have been drawn (FF 5).

Thus, we agree with the Examiner's determination that Kanisawa Scales is evidence of a prima facie case of obviousness for claims 3 and 4.

CONCLUSION

Appellant has not shown that the Examiner reversibly erred in rejecting the claims over Kanisawa. Accordingly, it is reasonable to shift the burden to Appellant to prove that the product produced in Kanisawa does

not have the recited “martensite base” property as required in claim 1. The Examiner has also established that claim 3 is rendered obvious by the product taught in Kanisawa.

ORDER

The Examiner’s rejection of claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over Kanisawa is affirmed.

The Examiner’s decision is affirmed.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

PL Initial:
sld

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